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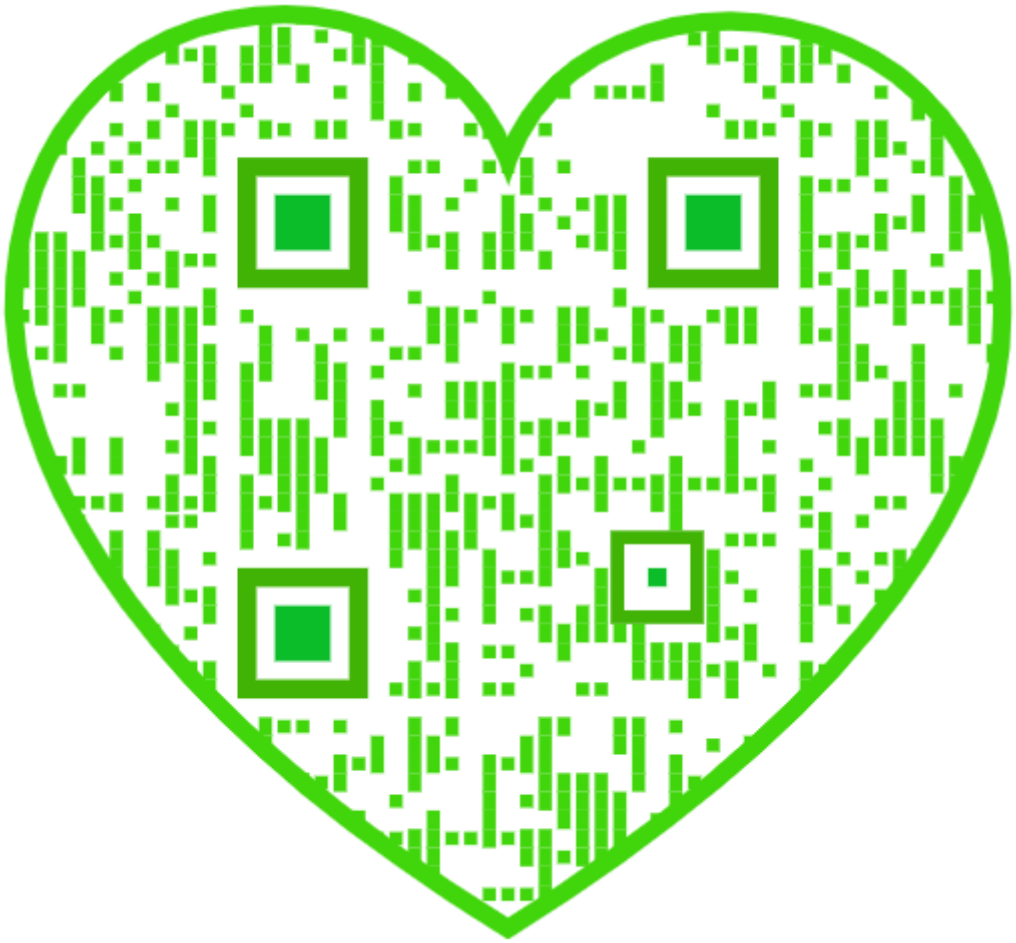

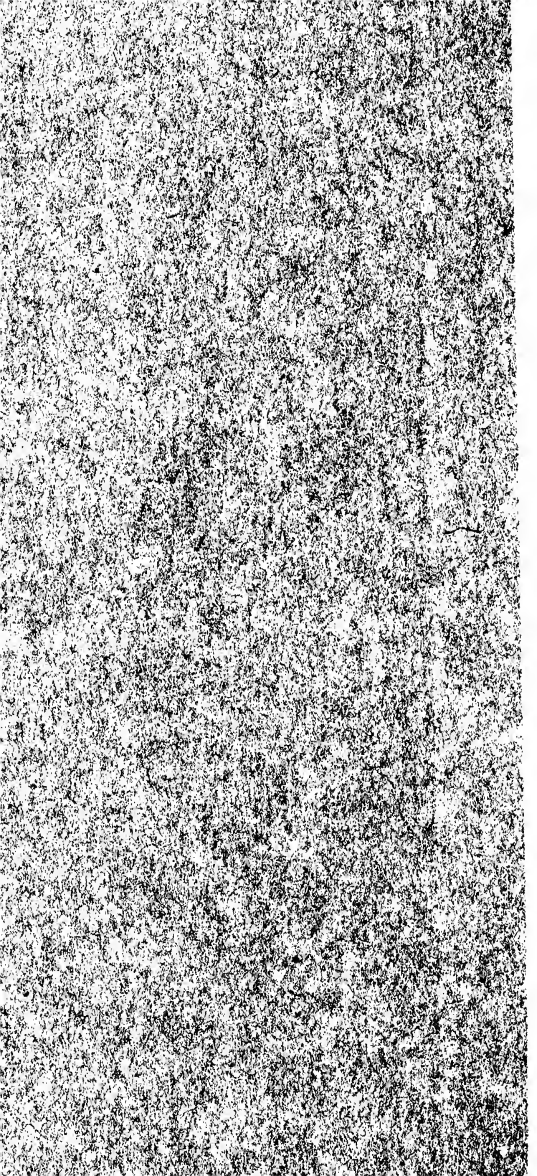

Presented June 17, 1864

THE BEE MANAGER:

WITH DIRECTIONS FOR

MAKING AND MANAGING

THE

VERMONT AND PERFECT BEE HIVES.

By C. G. C.

SECOND EDITION.

GENEVA:
IRA MERRELL, PRINTER.

TO THE READER.

In justice to Mr. WEEKS; the patentee of the Hives described in this little work, I will here notify the reader that I am indebted to his Manual on Bees, for much of the substance of the remarks here presented in a condensed form, mingled with my own observations, and designed as an accompaniment for those who use the Hives.

The work is entirely practical, as it was judged that its end would thus be better promoted than by science and argument.

Entered, according to act of Congress, in the year 1844, by C. G. CARPENTER, in the Clerk's Office of the District Court of the Northern District of New-York.

THE BEE MANAGER:

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VERMONT AND PERFECT BEE HIVES.

BY C. C. C.

Among the useful animals which a gracious Providence has allotted to our use, the Bee has a claim to high consideration. He stores up, for his owner's use, a nutritious, palatable and salable article of food, without expense of fences, or pasturage, and with far less care than most domestic animals. True, they need some care; and this should be timely and judiciously bestowed; but females, boys, or infirm persons, can, with a few instructions and a little experience and observation, give them every attention, and mechanics, professional men, and gentlemen of leisure are becoming highly interested in keeping them, and feel amply compensated, and are greatly delighted to pass away an hour of leisure in observing their industrious and skillful operations. Perhaps no animal is so profitable, yielding at so little expense so great an income according to the investment. From close examination and accurate estimation, the writer believes that from one hundred and fifty to two hundred per cent. may be confidently expected as an average profit above all ordinary losses and expenses, and four hundred per cent. is not infrequently realized. But,

"There are no gains without some pains."

ON THE BEES.

There are three different sorts of Bees in each hive, viz: The Queen, or only female; drones or males, and neuters, or common working bees. These last are, by some, called non-breeding females. There is but one Queen in the hive, whether the hive be larger or smaller. She is some larger and much longer than the common worker, and easily distinguished the moment she is seen: she has a sting, but rarely or never uses it, unless in conflict with another queen.

The drones are numerous until about August, when all, excepting, perhaps, a very few, are killed or driven from the hive. They are large and clumsy in their form, and without a sting.

When a hive is destitute of a queen, the bees provide one if they have brood comb in which the young are not too far advanced. The queen leaves the hive with the first swarm, when the remaining bees supply themselves with another, and generally with more than one, as may be known by listening at a hive eight or ten days after first swarming, or two days after the second swarming, when the angry notes of different queens may be very distinctly heard, when the hum of the bees is not too great.

ON THE HIVE.

The hive should be constructed with reference to hatching and rearing the greatest number of young bees, storing food, swarming, dividing, doubling, feeding, warmth, a just supply of air, protection against the miller and worm, defense against robbers, and obtaining with the greatest facility the greatest amount of pure surplus honey.

No hive, known to the writer, has stood the test of experiment so well, or given so good satisfaction to those who have used them, as the Vermont Hive and the Perfect Bee Hive, patented by John M. Weeks, of Vermont, the former June 30, 1836, the latter July 1, 1841.

This hive contains lower or central, upper and collateral or side apartments. The lower or central, is for the ordinary use of the bees; the upper and the collateral are for obtaining surplus honey, multiplying swarms by dividing, doubling, i. e., putting two or more swarms into one hive, feeding, transferring to another hive, and raising and supplying extra queens.

The size of the hive is a prime object of consideration. If too large, the bees will not swarm early, and honey and bread will accumulate beyond the wants of the bees, and sour. If enlarged to a room they will not swarm at all; and as a swarm of bees, be it ever so large, retains but one queen, she cannot, however prolific, long supply young enough to meet the constant diminution of the colony. Experience has taught that there should be one queen to about five pounds of bees, and the most economical size for the lower apartment of a hive is that of about a bushel in capacity, or having its three internal dimensions about equal to thirteen inches each.

The chamber should be internally fourteen inches from front to rear, twelve and a half from side to side, and six and a quarter high. As the four sides of the hive should be one and a half inches thick, the hive will be externally fifteen and a half inches wide across the front and sixteen and a half deep across the sides. The height will

be regulated by the form of the bottom and back. If the bottom is level and the back perpendicular, the height will be twenty inches, but if the back is inclined three inches towards the front, so as to lessen the hive at the bottom, and the bottom inclined so as to make the front the highest, the height of the front may be twenty-three inches, and from the lower termination of the back twenty inches perpendicularly ; in this case the sides will have five angles.

The back extends no higher than the lower apartment of the hive.

The chamber floor is the partition between the upper and lower apartments. It is thirteen and a half inches long, to reach from side to side of the chamber and to enter a groove in each side of half an inch in depth and fifteen and a half inches wide, to enter a like groove in the front, and to allow a rabbet of one inch on the upper side of the back edge for a jamb to the door of the chamber. Similar jambs are made on the inner edges of the sides above the floor. The groove for the chamber floor may be three quarters of an inch wide. The upper surface of the floor must be level. It has eight one and a quarter holes for a passage for the bees from the lower apartment. Four of these holes are in a line three and a half inches from the front, and the remaining four in a line ten and a half inches from the front. The four holes in these lines, next to the sides of the hive, are two inches from the sides, and the other four are four inches from the sides.

The top board covers the hive, projecting half an inch on all sides, and has a groove or rabbet for the door.

The door is thirteen and a half inches long and about seven inches wide, and fitted to the rabbets in the sides, chamber floor and top, and may be hung with hinges and fastened with a lock or bolt; or it may be slipped up into a groove in the top board and locked or bolted at the lower edge.

The bottom board must of course be adapted to the shape of the bottom of the hive. If this is an inclined plane, it should be even with the bottom of the hive all around, excepting projecting two inches in front. It should be suspended by four hooks two inches long, fastened to it by staples, and hooked, point down, into four staples in the sides of the hive near the four corners, half an inch from the bottom. It should be cut so short as to admit cleats nailed to the ends, to prevent warping. A channel three inches wide and three-eighths deep should be cut from near the centre to the front edge, to admit the bees; or, instead of this channel, five or seven holes three-eighths of an inch, not larger, may be bored in the front, in a line two or three inches from the bottom; or the front and back of a hive may have a square angle in the middle of the lower end and projecting below the sides, in which case the bottom will be composed of two boards nailed together like two sides of a box, forming two inclined planes and meeting in a line drawn from the middle of the back to the middle of the front at their lower extremities. Holes should be bored and the bottom suspended by hooks as above.

If the bottom of the hive is square, the bottom board may lie upon a bench, and be one and a half or two inches thick; and a channel cut, as above mentioned, one inch deep and three inches

wide, and covered with a board five-eighths thick, making the channel three-eighths deep, and projecting within the hive four inches, and without the hive two inches; or this culvert, or covered passage, may be made by mortising. But the hive suspended and the bottom board movable is preferable, except when the best attention is given to the construction and management of the hive. In this case a button fastened to the back of the hive, in the middle near the lower edge, cut with a bevel, shuts the bottom close to the hive; or, by turning, admits it to fall less or more, at pleasure.

Two cleats one inch square and twenty-one inches long, and nailed on the sides of the hive against the chamber floor, projecting forwards and backwards alike, enables the hive to be suspended.

Two sticks of siding, about three inches wide in the middle and pointed at the ends, may be sprung in to the hive from corner to corner, at half the height of the hive, crossing each other to sustain the bees and comb.

The Collateral Boxes are equal in height to the lower apartment of the hive, and of the same depth from front to rear, and six and a quarter inches wide in the clear. Holes corresponding to those in the chamber floor, in number, size and position, are made in the side of the collateral boxes, which are next to the central hive, and also in the central hive, to afford a passage from the hive to the box. The back of the collaterals is occupied by the door which should be well fitted into jams. One of these collaterals is used for multiplying, and called a collateral box: the other as a chamber to place drawers in for surplus honey, and is called a collateral chamber: or both may be used as cham-

bers. The design of the collaterals is, to change the hive from a swarmer to a multiplier and non-swarmer. The collateral box should have a pane of glass fixed within the door, to prevent the comb being attached to the door, and to allow an examination of the state of the bees, to know when to divide them: it may also have a mouth like a hive. The collaterals may rest on a bottom board like the hive, on a square bottom; or if the hive is suspended, a cleat nailed on each side of the hive, near the bottom, will support them; they being kept close to the hive by hooks and staples at the top.

Ventilators are an apparatus for regulating the heat and supplying air. A ventilator consists of a hole in which is inserted a tin or zinc tube two and a half inches in diameter and two inches long. One inch enters the board of the hive and is fastened; the other inch projects outwards. In the projecting part are five half-inch holes, equidistant in the circumference, and covered on the inside with a wire screen: a cap is fitted to this tube, having holes in the rim to correspond with those in the tube: by turning this cap, more or less air is allowed to pass. Every hive and every collateral, (except those hives which have movable bottom boards will not need one at the bottom,) should have two ventilators; one in or near the bottom, and the other in or near the top. When both are in the sides of the hive, they should be in opposite sides. These apertures in the sides of the hives may also be covered with a wire screen.

A thermometrical chamber is a place in or near the top of the hive for inserting a common thermometer, to aid in regulating the heat of the hives.

It is made by cutting a hole quite through the hive large enough to receive the thermometer: the inner side of the aperture is covered with a wire screen, and the outer one with a slide. Inclose the thermometer, and the degree of heat is ascertained.

The hive should be made of sound, well-seasoned pine, rabetted or matched at the corners, made with tight joints, well nailed, planed and painted white outside; planed on the inside and rubbed with cold beeswax, and the lower side of the chamber floor made rough by scratching. Some prefer making the body of the hive by itself, and the chamber in the form of a cap to be lifted perpendicularly. Every hive, every frame and every drawer, should be made from the same pattern, and should have its weight marked on it.

The form or size of the hive, or of any part of it, may be altered to suit the owner, retaining the principles of the patents.

Drawers are made of thin siding, or siding and glass, and named from the number that will fill a chamber. No. 1 will fill a chamber, and has eight holes corresponding to those in the chamber floor. No. 2 is six inches square and fourteen inches long, on the outside. No. 4 is six inches square and seven inches long. No. 8 is seven inches long, six high and three wide. No. 16 is seven inches long, three high and three wide. Nos. 8 and 16 are more curious than profitable. If glass ends are not used, cut a hole three inches in diameter, with a kind of bit in one or (better) both ends, and cover with glass on the inside.

A single *Frame* for a non-swarmer and multiplier, standing on a square bottom, may be thirty-two inches long, eighteen wide and twelve high.

For a hive without the collaterals and with an inclined bottom, the four posts may be three feet high, two by two inches, fastened in a square by four strips at top and bottom, three inches wide and twenty-one and a half inches long, let into gains and well nailed, with stops nailed on the inside of the posts, twenty-four and a half inches high, for the cleats of the hive to rest on.

Four *Slides* of sheet-iron, sixteen inches long, two of them twelve and two six inches wide, are necessary for drawing honey and dividing swarms.

The *Hiver* consists of three unplaned boards, nailed together like three sides of a box, six or seven inches wide and sixteen or eighteen inches long. An iron, with a socket or shank for fastening a handle, is forked so as to pass up two sides of this box, in the middle, from the open side, and nailed. When the bees choose their alighting place, hold the hiver by the handle, (which should admit of being lengthened or shortened,) near the spot; and when the bees begin to enter it, (the open side being down and twenty or thirty half-inch holes bored in the top to admit them,) remove it a little distance, and the bees will soon collect in it: if any are reluctant to leave the limb, shake or brush them into the air.

HIVING BEES.

Have hives always ready. Let them be clean, sweet and cool, and communication with the chamber closed. Rub the hive with nothing but cold beeswax. When the swarm comes out, suffer them to alight quietly, making no noise of any kind: then, as soon as practicable, place your hive conveniently, either in its frame or otherwise,

and cut off the limb containing the bees, or brush them with a wing into a small basket or other vessel, throwing a cloth over them, (or use the hiver,) and carry to the hive: gently shake or empty them down near the hive or under it, having first placed a board, cloth or something else, to facilitate their access to the hive. When most of them are in the hive, close up the bottom board till the third or fourth day, and put the hive in its place immediately. If the hive is nearly full of bees, give them access to the drawers without delay; otherwise in eight days, or six if the weather has been fine. Should it so happen that considerable time has elapsed between the swarming and hiving, they should be removed after hiving, some distance, so that if a delegation has been sent to find a home in the woods, they shall not find the swarm on their return.

QUANTITY OF BEES.

In estimating a hive of bees, regard the number of bees more than the weight of honey. A full complement of bees should be had in every hive, both old and young. This is requisite to their necessary warmth and to preventing robbery, and is the best defense against the miller or worm, and is the most economical, as fewer hives are used, and as bees enough to fill a hive of the common size will deposit more surplus honey in one hive than they would if put in two hives, and will consume less. If the swarm, when first hived, does not weigh four or five pounds, hive a small swarm in a drawer, No. 2, as soon as convenient, and at evening place the drawer in the chamber of the hive, and the bees will commingle without

difficulty; but if any fighting or death occur, blow a little smoke of tobacco or puff-ball into the hive. Should this not make the requisite quantity, another swarm may be added in the same way, and another, and still another. Examination should be made into the state of the old hive, to see if its numbers are too much diminished by swarming. If so, the swarm should be made to return by shaking it on a cloth or table, and taking away all the queens, which in some swarms are five or six: after this, they return immediately. Third and fourth swarms should always be returned in this manner, if the old swarm is to be saved, and in many cases the second. When second swarms are not returned, they should be doubled. Feeble swarms may be doubled in the beginning of winter.

FOOD.

A good swarm will provide sufficient food—honey for themselves and bread for the young. If they have less than thirty pounds besides the weight of the hive, at the middle of October, they should be fed by putting honey, not candied, or a syrup of sugar or molasses, on a scooped board or other vessel, in the chamber of the hive, in such manner that they can carry it below and store it for use. If they need feeding in winter, they should be placed where the chamber will be warm enough for the bees to enter at all times. As feeding may induce robbery, due care should be taken to keep the entrance well closed, or to feed when the bees do not fly. They should weigh twenty-five pounds, besides the hive, on the first of December. When the latter part of winter and

the former part of spring have been mild, the quantity of bees will be much increased by April, and the quantity of food much diminished, in which case, should there be much cold or wet weather in April, or May, or even in June, some of the swarms may require feeding. Winter feeding should be avoided by liberal fall feeding.

AIR.

In a moderate temperature, a little air suffices; but in either extreme, more should be admitted, by dropping the bottom board or otherwise, and opening the ventilator near the top. This, in hot weather, reduces the excessive heat, and in cold weather, carries off the breath and vapor of the bees and prevents the forming of white frost in the hive, which would chill the bees and prevent their moving to their food. As too much air in the spring and cold turns would delay and endanger the hatching of the young brood, and as too little in hot weather would prevent their working, and in cold weather would endanger their lives, a proper ventilation is an important part of bee management. This is best accomplished by the aid of a thermometer. (See construction of a hive, p. 7.) Bees very often die by snow accumulating around the hives and shutting out the air. When bees are found chilled, let them be removed to a warm room and thawed.

WARMTH.

A good swarm, in a good hive, with sufficient food and sufficiently ventilated, will generally pass the winter in safety, in the open air; but it is better to have a house to secure them from the seve-

rity of storms and wind, and from the sun. They may be placed in a chamber, or out-building, or dry cellar; but in such case they should, by darkness or otherwise, be prevented from leaving the hive. The feeble swarms should be placed in a mild temperature; or, what perhaps is better, united to other swarms.

WORM OR MILLER.

No depredation will often be committed in a well made Vermont or Perfect hive, if kept well filled with bees; but if the anxiety of the owner to increase his swarms prevents his doubling and returning swarms, as directed in page 11, he will much expose himself to suffer loss. It is well to examine daily, or two or three times in a week, in and about the hive during the entire season of the flying of the bees, and remove any spiders, worms or millers that may be found.

ROBBERS.

When robbery is commenced, which may be known by some bees being killed, and an unusual quantity of the caps of the honey-cells fallen on the bottom, sprinkle the bees about the hive bountifully with cold water, and close the hive in the day time, but not so as to exclude the air. Removing them should not alone be depended on, except it be to some distance.

LOSS OF THE QUEEN.

Bees frequently lose their queen. The attentive observer will soon perceive this accident, by a cessation of their ordinary labors, and the appearance of confusion about the hive. They are

often lost in swarming; in which case the swarm always returns. In this case, she may often be found, as a few bees are always with her, and should be carefully taken in the hand and returned to the hive. If she is not found, another should be immediately supplied; as, also, every swarm should be that is found destitute. During the swarming season, supplies are always on hand, as second, third and fourth swarms have a plurality, of which one may be taken and introduced at the mouth of the hive; or any drawer may be taken, containing bees and brood comb, and the bees shut in for three or four days, giving them clean water daily. This may be kept till wanted, and then placed in the chamber of the hive destitute of a queen; or, if known to be destitute, the box containing the brood comb may be inserted at once. Bees, when destitute of a queen, will accept any queen, or brood comb instead of one; but a living queen is best, especially in the swarming season, when time is precious, as it takes one or two weeks for a queen to mature from the brood comb.

MULTIPLYING SWARMS WITHOUT SWARMING.

For this purpose, insert drawer No. 1 in the chamber, and when it shall contain bees and brood comb, remove the drawer to the chamber of an empty hive; or if the collateral box is used, let it be removed, when filled, to the side of an empty hive, and put an empty collateral box in its place.

In either case, both parts of the swarm should be shut in for three or four days, giving pure water daily. Dividing should be effected just before they would naturally swarm.

TRANSFERRING BEES FROM ONE HIVE TO ANOTHER.

This should be done when the comb in a hive is old. Let them have drawer No. 1, well filled by themselves or another swarm, as early as August; and if they need a new hive, they will leave the hive below and take possession of the drawer. Here let them remain until they can carry in plenty of bread, in the spring, as the drawer contains but little: then remove the drawer to the chamber of an empty hive, which should be placed where the old one stood, the latter being overturned; or this may be effected with a collateral box with equal facility.

REMOVING HONEY.

Insert both the slides under the drawer, and then withdraw the upper slide and drawer together. Put in an empty drawer and remove the other slide. Put the drawer containing the honey a little distance off, and the bees will soon leave. If the drawer is left, the bees will soon commence carrying the honey to the hive; therefore, the drawer may be placed in the dark, as in a room, under a box, or barrel with one head, leaving a hole for the bees to escape to the hive: the honey being in the dark, they will not return to it.

REMARKS.

The design of the culvert bottom board is to assist the bees in guarding the entrance against robbers and depredators. By opening so far within the hive the sentinels can have the heat of the hive to enable them to remain on duty during the chilliness of the night.

The cap of the ventilating tube in the bottom board will receive the bits of comb and other matter thrown down by the working of the bees, and should the miller get into a hive through the culvert passage, she will first meet this place of deposite for her eggs, and finding it to contain the exact substance of her choice, will leave them there. The cap may be emptied every two or three days.

Though the Vermont or Perfect Bee Hive is more expensive than the common box hive, yet as the small swarms are either returned, or two, three and even four or more are put into one hive, not much more than one-third the number of hives is used.

A small swarm may be returned by hiving in a drawer and placing it in the chamber of the hive whence it issued; but then the queen is saved alive and will probably bring out the swarm again.

When obliged to move bees a short distance during their working season, on the morning after moving, about the time they begin to fly, puff them with a little tobacco smoke.

When honey is strained, the comb, before being made into wax, may be soaked in water to extract the remaining honey, and the liquid boiled down to a syrup for feeding bees.

Stone jars are better vessels than earthen for storing honey.

When the hive is designed to stand on the bottom, a little lime paste may be first put upon the bottom board where the bottom of the hive touches it.

ADVICE.

Insert drawers when the fruit trees are fully in blossom.

Withdraw them in the fall and close the access to the chamber.

When they are not in use, whether full or empty, paste some thin paper over the holes.

Stick on a little piece of white comb in the drawer, where you wish the bees to commence.

Rub the drawer with cold beeswax, on the inside.

Nail on the bottom with large tacks, that will draw easily when the drawer is to be opened.

Before opening, pass a fine wire or strong thread across, between the board and comb, from end to end, to separate the comb from the board.

The sun should never shine on a hive, in warm weather, especially at the time or soon after hiving.

Secure your bees from all intrusion.

Sprinkle fine salt on the bottom board, occasionally.

A looking-glass will throw the light of the sun into a drawer; or, placed under the hive, will show the state of the bees.

As want of room is the cause of first swarming; so it may be the cause of their leaving after they are hived.

As two or more large swarms may alight together, some of your hives, at least, should have collaterals.

Use drawers in both collaterals, if your swarm is large, and you do not wish to divide them nor have them swarm.

Bees should not be moved even three feet, during the working season. When moved to a distance, turn them on the top: shut them in so as to admit air.

To unite two swarms at the beginning of winter, blow a little smoke of tobacco into both hives: turn over the one that is to leave, and place the other over it.

To stop bees in flight, throw dirt among the leaders.

It is convenient to have one pane of glass or more in the hive.

If the ventilating tubes are not used, the aperture may be one and one-fourth inches.

The ventilating process is very important.

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